

## SAFETY CONNECTOR WITH POWER BREAKER

## BACKGROUND OF THE INVENTION

Electric appliances are designed for households or industries in this "era of electricity". Our daily life all rely greatly on plugs to provide power/electricity. Plugs will need sockets to take effects and form a dual entity, and also create safety problems inevitably when use. Conventionally, plugs are assembled in two ways, that is, either locking the upper and the lower plug plates with the cover, or that the wires and the plug itself are cast into an embodiment. In the former design wherein the plug plates are locked up by the cover above and beneath, thus the pole plates at the two ends are readily loosen and dangling, which may cause accidents due to poor electric contact. Although the latter design involves casting a plug with a die and therefore the use of the plug is stable and effective, the latter design has two drawbacks. Firstly, the plug entity is not equipped with any device to shutdown power. Therefore, when the plug steel plates are been plugged in and out of socket, which may generate sparks. Secondly, the plug plates are normally exposed in the air at certain humidity and generate static electricity when use; besides, if the wires are not long enough, the extension socket will be used and the danger of electric



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shocks will increase when plug in and out of extension socket. Hence, there should be rooms for improvement in the structure of the conventional plugs.

## SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a safety connector with power breaker, comprising a base, a socket, a terminal plate, a conductive board, a switch, and an electric wire, wherein the conductive board will bounce off due to the high temperature coefficient to instantly disconnect the power and demonstrate the function of automatic power breaker. The secondary objective of the present invention is to provide a safety connector with power breaker, comprising a concave track each on both sides of the groove in the base and an arc opening to form a circumference with the semicircular openings at the section of the two longitudinal boards of the socket, and a fixed switch being used to balance the support axle to facilitate the control over the switching function.

Another objective of the present invention is to provide a safety connector with power breaker, comprising two aslant wings coupled to both ends of the conductive board for being slid and embedded into the square groove at the bottom of the two longitudinal boards in order to fix the board into a position.

Another further objective of the present invention is to provide a safety connector with power breaker, comprising a protrusion on the surface of the groove in the opposite direction to the arc surface of the latch which is coupled to the bottom of the socket in order to integrally couple the safety connector.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is an illustrative diagram of the safety connector with power breaker according to the present invention;

FIG. 2 is a perspective diagram of the components of the safety connector with  
5 power breaker according to the present invention;

FIG. 3 is a cross-sectional diagram of the assembled structure according to the present invention;

FIG. 4 is an illustrative diagram of the automatic switch being latched to a fixed position on the conductive board according to the present invention;

10 FIG. 5 is an illustrative diagram of the assembled structure of the automatic switch being latched to the conductive plate latching base;

FIG. 6 is an illustrative diagram of the assembly according to the preferred embodiment of the present invention; and

FIG. 7 is an illustrative diagram illustrating how the components work according to  
15 the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Please refer to FIGS. 1 to 7 for the safety connector with power breaker in accordance with this invention, comprising a base, a connector, a terminal plate, a conductive board, a switch, and an electric wire. The base of this invention is a square frame 5, forming a closed wall 51 in the front section of the base, and comprising two through holes 511, 512 disposed on the two terminal plates at the ends of the board. A groove opening 52 disposed on the rear end of the said base for receiving the corresponding socket, a coupling hole 53 disposed on the top of the frame of the base, two concave tracks 55, 555 disposed in the inner groove of the groove opening, and the bottom of the track being substantially a semicircular opening 56, 566. A conical surface 571 disposed in the opposite direction to the front of a protrusion 57 which is coupled to the bottom of the groove of the said base, and a groove 58 being defined next to the protrusion for accommodating the electric wire and two symmetric indentations 588 being formed on both ends of the groove for securing the electric wire and preventing it from loosening or falling apart.

The socket comprises a plugging board 6 coupled to a base block 61, an insert hole 62, 621 being disposed on a front board 611 responsive to two through holes 623, 625 on both sides of the plugging board. Two longitudinal boards 65, 655 being integrally extended to the rear end of the plugging board, and the section with an appropriate distance between the two boards forming a semicircular opening 66, 666, and a gap 67 being kept between the end of the board and the front board 611 to fix the terminal plate into a position. Two square grooves 68, 681 being disposed responsive to each other on both longitudinal boards, and a sliding track 619 being disposed at the bottom of the base, and a latch 69 coupled to the protrusion being disposed at the middle of the sliding track.

The terminal plate comprises two long board components 7, 77, each being bent to

180° at the middle section of the merged boards, and a corner 78 of the bent section of one terminal plate for embedding into the groove. The bent section of the other terminal plate is a substantially S-shaped board for hooking into the gap and coupling to the opening of a duct to secure the terminal plate into a fixed position.

5       The conductive plate, comprising two wing plates 81, 82 integrally disposed aslant to the rear side of a flat board 8, and a tubular section 83 disposed at the rear end of the board for clipping the electric wire 831. An arc board 85 tilted in front of the said board body such that the holes on the conductive plate 86 precisely running across the arc board to couple the end of the conductive plate with another end of the terminal plate and further  
10       provide the rear end of the S-shaped board for the electric wire 881, which is clipped in the diameter of the conductive pipe 88.

      The switch is a T-shaped block 9 having a hole at the lower section 91 for plugging a bouncing component 911, and a contractible valve 912 coupled to the rear end of the bouncing component for being plugged into the hole. A support axle 93 passing through a  
15       hole on one side of the said T-shaped block to the hole on the opposite side such that both axial ends of the support axle are installed into the base and the two semicircular openings of the socket to constitute a balance direction of a circumference to facilitate the semicircular component of the contractible valve of the lower section normally attaching onto the conductive board. The said conductive board lifts the arc board 85 at the middle  
20       section for switching its movement at the front and back sections, and the conductive board will bounce off due to the high temperature coefficient to instantly disconnect the power and demonstrate the function of automatic power breaker.

      The application of the socket according to this invention passes an electric wire at the tubular section 83 of the conductive board through the bottom of the socket slot, and  
25       gently presses the conductive board such that the wing plates aslant to both sides are

embedded into the square grooves of the two longitudinal plates. Then using the conductive pipe 88 to clip the tubular section of the electric wire and passes its bottom through the hole of the base to plug the bent corner 78 of the terminal plate into the gap. An extended component 789 at the rear end is coupled to the base board such that the two longitudinal boards of the plugging board are aligned with and pushed into the two tracks 55, 555 inside the grooves of the base, so that the semicircular openings at both ends of the two boards and the corresponding semicircular openings 56, 566 at the bottom of the track jointly define the circumference and fix the T-shaped component of the support axle to form a balanced direction in order to facilitate the contractible valve surface 912 at the lower section of the switch to normally attach to the end of the conductive board. The conical surface 571 in the opposite direction of the protrusion of the groove of the base is used to gently push the arc surface in front of the latch 69 of the sliding track of the socket for the mutual connection as one piece. When the plugging board 6 is installed onto the frame of the base while the spherical component of the tubular section 83 at the rear end of the conductive pipe and the electric wire 881 clipped by the conductive pipe 88 are jointly latched into the groove 58 and the solid assembly of the two symmetric openings 588. Consequently, the electric energy will be overheated and overloaded. By means of the conductive board tilting the arc board 85, its middle section is set for the switch movement at both the front and rear sections, such that the conductive board will bounce off due to the high temperature coefficient to instantly disconnect the power and demonstrate the function of automatic power breaker.

This invention adopts a safety switch for the connector to prevent any accidents due to spark caused by electrical overload or overheat that jeopardize people's life or health.

While the present invention has been described in connection with what is considered the most practical and preferred embodiment, it is understood that the invention

is not limited to the disclosed embodiments but is intended to cover various arrangements included within the spirit and scope of the broadest interpretation and equivalent arrangements.